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# MULTIMEDIA UNIVERSITY

# FINAL EXAMINATION

### TRIMESTER 1, 2016/2017

### TPB3141 – PASSWORD AUTHENTICATION AND BIOMETRICS
( All sections / Groups )

07 OCTOBER 2016
3.00 p.m – 5.00 p.m
( 2 Hours )

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**INSTRUCTIONS TO STUDENTS**

1. This question paper consists of 7 pages, excluding the cover page, with 6 questions only.

2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

## Question 1:

Please attempt **ALL** multiple choice questions.          [10 marks]

   i.   _____ and verification techniques provide similar functions in a biometric system.
- a. Authorization
- b. Authentication
- c. Identification
- d. Validation

   ii.   A _____ characteristic is a relatively stable human physical characteristic.
- a. behavioral
- b. physiological
- c. keystroke
- d. geo-location

   iii.   _____ is the generic term used in the description of biometric system (e.g., face or iris) relating to their fundamental function.
- a. Identification
- b. Recognition
- c. Verification
- d. Authorization

   iv.   _____ fingerprints obtain an image that includes fingerprint data from nail to nail by "rolling" the finger across a sensor.
- a. Slap
- b. Rolled
- c. Ink-based
- d. Pressed

   v.   Speaker recognition systems employed three styles of following spoken input, EXCEPT: _____.
- a. text-independent
- b. text-filtered
- c. text-dependent
- d. text-prompted

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vi.     _____ describes the awareness that biometric sampling and identification is occurring.
   - a. Cooperative vs. non-cooperative
   - b. Habituated vs. non-habituated
   - c. Overt vs. covert
   - d. Attended vs. non-attended

vii.    The watch list is a term used with _____.
   - a. open-set verification
   - b. closed-set verification
   - c. open-set identification
   - d. closed-set identification

viii.   PCI DSS was developed by the major _____ as a guideline to help organizations that process card payments in preventing credit card fraud, hacking, and various other security issues.
   - a. E-commerce sites
   - b. banks
   - c. credit card companies
   - d. shopping companies

ix.     A _____ is a password-protected file that contains identification information about its holder.
   - a. digital signature
   - b. hashing certificate
   - c. digital certificate
   - d. checksum

x.      _____ is the ability of an individual or group to seclude personal information and thereby reveal information selectively.
   - a. Assurance
   - b. Repudiation
   - c. Privacy
   - d. Confidentiality

## Question 2:

a)  Fill in the blanks with the most appropriate information security element:

    i.    _____: refers to the ability to ensure that a party to a contract or a communication cannot deny the authenticity of their signature on a document or the sending of a message that they originated.

    ii.    _____: is the practice of assuring information and managing risks related to the use, processing, storage, and transmission of information or data and the systems and processes used for those purposes.

    iii.    _____: designed to prevent sensitive information from reaching the wrong people, while making sure that the right people can in fact get it.

    iv.    _____: maintaining the consistency, accuracy, and trustworthiness of data over its entire life cycle.

    v.    _____: rigorously maintaining all hardware, performing hardware repairs immediately when needed and maintaining a correctly functioning operating system environment that is free of software conflicts.

[5 marks]

b)  Many web sites are failing to protect user privacy. In order to provide a secure and convenient shopping experience for consumers on the Web, the gaining access must adhere to the three central concepts of information security. Identify **THREE** [3] of them, describe their concepts by providing an example for each of them.

[3 marks]

c)  Reported by Jonathan Keane at DigitalTrends.com, Oculus CEO Brendan Iribe found his Twitter account was compromised on 30 June 2016, with the culprit sending out a fake resignation tweet. List **FOUR** [4] possible ways where a password can be easily compromised.

[2 marks]

## Question 3:

a) In 2014, an investigation around the publishing of nude photos of celebrities taken from their iCloud storage accounts, identified that intruders could access Apple's Find My iPhone app by continually trying different login details. How can you prevent a series of password guessing attacks against a single account? Explain your answer.

[4 marks]

b) Security features in automotive have come a long way since introduction of simple features like car alarms and keyless entry. The scheme for enabling security in automotive is to embed security modules into both of its hardware and software components. To ensure the instructions sent are not tampered, you can use hash functions. Identify **ONE [1]** hash function which is able to ensure message integrity and **ONE [1]** hash function which is able to ensure both message integrity and authenticity. Distinguish them.

[2 marks]

c) Since January 2015, Malaysia's Ministry of Home Affairs revealed plans to issue a biometric identification card to more than two million foreign workers to make it easier for local authorities to track down illegal immigrants.
Provide a comparison table for these four card technologies, which are (i) magnetic stripe, (ii) smart card, (iii) optical card, and (iv) RFID, from the perspective of: suitability, data storage, ease of use, cost, and security; and identify the best card technology which you think is the most suitable to be adopted in the aforementioned scenario.
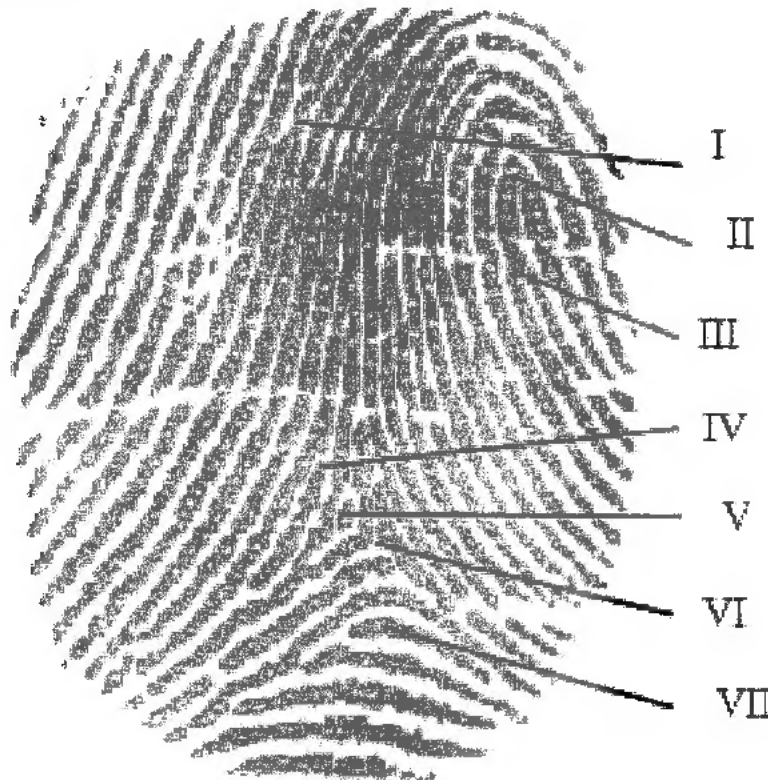
[4 marks]

**Continued .......**

## Question 4:

a) Identify the main feature of Secure Electronic Transaction specification.

[1 mark]

b) You are a biometrics application researcher in Malaysia, state FOUR [4] possible applications to the Malaysia industry where biometric access control technology can be used.

[2 marks]

c) Given a fingerprint figure below, identify the components of I, II, III, IV, V, VI, and VII based on a given set of fingerprint ridge characteristics: [*delta; core; island; ridge ending; crossover; bifurcation; pore; ridge dot; ridge enclosure*]



[7 marks]

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## Question 5:

a) Facial Recognition, a beta feature currently offered by Simplicam, is the narrowing down of digital faces to potentially match one of those in a database, and so it can tell users when an unrecognized person is in their home. Identify the **TWO [2]** most popular and classical techniques availed for face recognition. Illustrate and distinguish them.

[4 marks]

b) Reported in masslive.com on 30 June 2016, Massachusetts State Police Trooper Todd Girouard testified that Dennis Rosa-Roman's palm print was on the glass in a broken porch window of Amanda Plasse's apartment, and thus, found guilty in murdering Plasse. Do you think palmprint can give better identification than fingerprint? Compare them.

[4 marks]

c) The purpose of implementing any biometric system is generally to maintain the same level of security at lower cost, or to improve security at a reasonable cost; while in most cases, the cost of implementing a biometric system will depend on whether biometric authentication can be added to the existing authentication infrastructure using standards such as BioAPI. What is BioAPI? Identify the importance of having BIOAPI.

[2 marks]

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## Question 6:

a) ERGO, an Android application, uses the ear as a biometric indicator, using the capacitive touchscreen to record a user's unique ear impression. Users can unlock their phone by simply tapping their ear at the centre of the screen. Analyze the feasibility of ear biometrics by providing **FOUR** [4] advantages.

[4 marks]

b) According to police statistic, a total of 3,937 children, aged between 6 to 18 years old, have been reported missing between 2014 until January 2016 in Malaysia. However, parents tend to treat child kidnapping lightly despite the ongoing awareness campaign and repeated warnings of child kidnapping case. Inspecting into this scenario, do you think a behavioral biometric solution can be made possible with the aid of CCTV? Evaluate your answer.

[2 marks]

c) "Google Photos" is an example of software, which uses artificial intelligence to identify faces among databases of millions of photos, and prompting users to "tag" people they know.
Analyze this deployment from the perspective of privacy continuum.

[4 marks]

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